We CLAIM:

1. An apparatus for imaging anterior structures of the eye, comprising:

- means for aligning the eye along a predetermined axis;

- means for projecting light onto the eye along said predetermined axis;

- means for capturing an image of said eye resulting from said projection aligned at a predetermined angle from said means for projecting; and,

- means for rotating said means for projection and said means for capturing about said predetermined axis.

2. An apparatus as in claim 1, wherein the means for aligning the eye along a predetermined axis comprises a first target means and a second target means, each of which is located on a first predetermined axis, with said first target means being closer to the eye, so that visual alignment of said first target means with said second target means results in the eye being aligned along a second predetermined axis.

2. ~~3.~~ An apparatus as in claim 1, wherein said first predetermined axis is the optical axis of the apparatus.

3. ~~4.~~ An apparatus as in claim 1, wherein said second predetermined axis is the line of sight axis.

4. ~~5.~~ An apparatus as in claim 1, wherein said means for projecting light onto the eye along said predetermined axis comprises a slit lamp.

5. 4.
~~6.~~ An apparatus as in claim ~~5~~, wherein the slit lamp comprises means for projecting a convex slit image.

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~~7.~~ An apparatus as in claim 1, wherein the means for capturing an image of said eye resulting from said projection is a camera.

6.
7. ~~8.~~ An apparatus as in claim ~~7~~ wherein the camera comprises a lens and a means for imaging.

8. 7.
~~9.~~ An apparatus as in claim ~~8~~ wherein said lens comprises a means for focusing.

9. 7.
~~10.~~ An apparatus as in claim ~~8~~ wherein said lens comprises a means for magnifying.

10 7.
~~11.~~ An apparatus as in claim ~~8~~ wherein said imaging means comprises a CCD array.

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12. An apparatus as in claim 1, further comprising means for providing said apparatus in at least one pre-defined position and storing said images of said eye captured by said capturing means corresponding to the at least one pre-defined position.

13. An apparatus as in claim 12 wherein said processing means provides said apparatus in a plurality of pre-defined positions and stores said images of said eye captured by said capturing means corresponding to said plurality of pre-defined positions.

14. An apparatus as in claim 13 wherein said plurality of pre-defined positions includes a first and a last position, wherein a position of said projecting means when said apparatus is in said last position is rotated substantially 180

respected to the predetermined axis

degrees from a position of said projecting means when said apparatus is in said first position.

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15. An apparatus as in claim 14 wherein said processing means further includes means for providing a three-dimensional representation of said stored images of said eye for analysis.

16. An apparatus as in claim 1 further comprising a means for determining a predetermined reference point on the eye.

17. An apparatus as in claim 16 wherein said determining means comprises a second means for imaging.

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18. An apparatus as in claim 17 wherein said second imaging means comprises a camera.

19. An apparatus as in claim 1 wherein the means for rotating comprises a motor operatively connected to a rotor.

20. A slit lamp assembly comprising:

a

- a light source ; and

- a means for projecting convex slit images.

Sub B7

21. An apparatus as in claim 20 wherein said slit lamp assembly further comprises a lens.

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22. An apparatus for imaging anterior structures of the eye, comprising:

- a first target means and a second target means, each of which is located on a first predetermined axis, with said first target means

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being closer to the eye, so that visual alignment of said first target means with said second target means results in the eye being aligned along a second predetermined axis;

- a slit lamp means comprising means for projecting a convex slit image;

- a camera means comprising a lens means and an imaging means, and aligned at a predetermined angle from said slit lamp means; and,

- a motor means operatively connected to a stepper means for rotating said means for projection and said means for capturing about said second predetermined axis.

23. A method for imaging anterior structures of the eye, comprising:

- aligning the eye along a predetermined axis;

- projecting light onto the eye along said predetermined axis;

- capturing an image of said eye resulting from said projection at a predetermined angle from said predetermined axis, with the projecting and capturing occurring during rotation about the predetermined axis.

24. A method according to claim 23, further comprising the step of projecting and capturing in at least one pre-defined position and storing data associated with said image of said eye corresponding to the at least one pre-defined position.

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25. A method according to claim 24, further comprising the step of projecting and capturing in a plurality of pre-defined positions and storing said images of said eye corresponding to said plurality of pre-defined positions.

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24-26. A method according to claim 25, further comprising the step of providing a three-dimensional representation of said stored images of said eye for analysis.

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27. A device for imaging anterior structures of the eye, comprising:

- a housing mounted to rotate about a first axis through selected arcs;

- a motor connected to and adapted to rotate said housing;

- a slit lamp mounted within said housing and adapted to rotate therewith about said first axis and further adapted to project a slit image;

- a lens mounted within and adapted to rotate with said housing and provided at spaced separation from said slit lamp, said lens further adapted to focus said slit image from the slit lamp and transmit said slit image to the eye;

- a first camera mounted on said housing and adapted to rotate therewith, said first camera being adapted to read the slit image projected on the eye, said first camera being mounted so that an imaging axis extends to meet the first axis of the housing at an angle of 45 degrees and is perpendicular to a surface of the eye where said imaging axis contacts the eye;

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- an alignment assembly including a beam splitter cube located in the housing between the lens and the slit lamp and positioned on the first axis of the housing for rotation with the housing, said beam splitter cube being adapted to translate a reflected image of a pair of fixation points at spaced separation through 90 degrees from the axis of rotation of the housing to the eye; and

- a second camera mounted within the housing and adapted to read a reflected image of the eye.

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28. A device according to claim 27 wherein said slit lamp includes a substantially planar generally rectangular slit therein for projecting a substantially planar generally rectangular slit image.

29. A device according to claim 27 wherein said slit lamp includes a substantially convex generally rectangular slit therein for projecting a substantially convex generally rectangular slit image.

30. A device according to claim 27 further including a filter mounted within the housing between the reflecting beam splitter and the slit lamp.

32. 28.
31. A device according to claim 27 further including a beam splitting cube and a second lens mounted within said housing between the second camera and the eye.

33. 28.
32. A device according to claim 27 wherein the alignment assembly further includes means for adjusting a position thereof along said first axis.

33. A device according to claim 32 wherein the alignment assembly further includes an illumination member for providing a source of light through the pair of fixation ~~points~~ targets.

34. A device according to claim 33 wherein the alignment assembly further includes a filter positioned between the illumination member and the pair of fixation ~~points~~ targets.

35. A device according to claim 27 further including processing means for providing said device in at least one pre-defined position and storing said images read by said first and second cameras corresponding to said at least one pre-defined position.

36. A device according to claim 35 wherein said processing means provides said device in a plurality of pre-defined positions and stores said images read by said first and second cameras corresponding to said plurality of pre-defined positions.

37. A device according to claim 36 wherein said plurality of pre-defined positions includes a first and a last position, wherein a position of said slit image when said device is in said last position is rotated substantially 180 degrees from a position of said slit image when said device is in said first position.

38. A device according to claim 36 wherein said processing means further includes means for providing a three-dimensional representation of said stored images for analysis.